OVERLAND PASS PIPELINE PROJECT

CONSTRUCTION, RECLAMATION, AND REVEGETATION

PLAN OF DEVELOPMENT

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1.0 STRUCTURE OF THE CONSTRUCTION, RECLAMATION, AND REVEGETATION PLAN

The Construction, Reclamation, and Revegetation Plan (CMR Plan) is structured to address site-specific construction mitigation, reclamation, and revegetation plans for each federal land management unit crossed by the pipeline route within BLM and FS lands. This document combines Overland Pass' project-wide Best Management Practices (BMPs) and site-specific mitigation which has been developed utilizing federal land management documents and consultation with agency resource specialists. Mitigation contained in this document may apply project-wide, or only to site-specific areas or conditions. **In instances where mitigation is site-specific, the text has been bolded.** Where appropriate, provisions that pertain to a specific management unit are discussed in greater detail.

2.0 PRECONSTRUCTION

2.1 Construction Right-of-Way Flagging and Project Signs

Overland Pass will complete a final civil survey and stake/flag the right-of-way to locate the pipeline centerline and the construction right-of-way boundaries. Overland Pass will stake the Additional Temporary Workspace (ATWS) boundaries, staging areas, sensitive environmental areas, reclamation treatment areas, access roads, and along the right-of-way every 200 feet, as appropriate, to maintain line-of-sight from one stake to the next. Overland Pass' contractor will be responsible for locating and marking underground crossings (e.g., gas and water pipelines, fiber optic cable, telephone lines, etc.), will be identified and flagged to prevent accidental damage during construction. Staking on the right-of-way and all ATWS will be inspected and maintained for the duration of construction and reclamation.

Overland Pass will preserve all existing General Land Office, BLM, FS, or other recognizable civil survey monuments, cadastral corner markers, witness points, triangulation stations, military control monuments, or other recognizable physical markers (public and private). If markers are disturbed are destroyed, Overland Pass will notify the installing authority and the BLM's Authorized Officer in writing of the incident. Overland Pass will be responsible for repairing markers using surveying procedures found in the *Manual of Surveying Instructions for the Survey of the Public Lands in the United States*.

Table 2.1-1 describes the color-coded flagging system proposed to delineate resource areas throughout the project:

TABLE 2..1-1

Overland Pass Color-Coded Flagging System

Flagging Color(s)	Resource Code
Orange	Pipeline centerline
Orange and Blue	Point of intersect
Pink	Survey control point
White	Limit of ATWS
White and Red	Limit of additional temporary workspace
Yellow	Foreign pipeline crossing
Blue	Waterbodies and wetlands
Green	Sensitive environmental / habitat area

TABLE 2..1-1 Overland Pass Color-Coded Flagging System	
Flagging Color(s)	Resource Code
TBD	Noxious weed area
TBD	Wash station

Signs will be posted along the construction right-of-way to identify sensitive areas and to alert construction personnel of restrictions that apply (table 2.1-2). The limits of these areas will be delineated at the edge of the right-of-way. Fencing may also be required in some areas to further protect site-specific resources. Routine equipment maintenance will be restricted to contractor yards and commercial sites off the right-of-way.

TABLE 2.1-2 **Overland Pass Project Signs**	
Sign	Description
No Refueling or Equipment Maintenance	Restrictive signs for place near wetlands, streams, wells, and environmentally sensitive areas. Signs will be placed at the boundary of the restricted work area.
Approved Access Road	Project-related right-of-way access roads will be identified by road number or name and posted speed limit.
No Project Access	Roads that lead to the right-of-way and could be confused with approved access roads but are not approved for use will be identified.
Sensitive Resource Area	Exclusion areas where equipment and personnel are not permitted to enter without approved will be identified with signs posted on the right-of-way boundary,
Noxious Weed Area/ Wash Stations (TBD)	Signs identifying populations of noxious weeds detected during pre-construction surveys will be placed to caution operators that special site-specific protocols apply in this area.
Regulated Waterbody	COE-regulated waterbodies will be identified; Overland Pass' waterbody procedures or site-specific plans apply at these waterbodies.
Regulated Wetland	COE-regulated wetlands will be identified; Overland Pass' wetland procedures apply at these wetlands.
Monitor Required	Areas where a resource specialist is required for ground disturbing activities will be identified.
Equipment Maintenance Area	Limited to contractor yards.

Overland Pass will require its construction contractor(s) post caution signs on roads, where appropriate, to alert motorists of pipeline construction and warn them of slow traffic. In addition, trucks transporting

pipe and heavy equipment will comply with all applicable state, county and federal laws, rules and permits for these loads.

Overland Pass has identified all landowner-specific issues of concern that may be affected by construction activities. In coordination with these landowners, Overland Pass will implement mitigative measures that:

- Avoid drain tiles and other types of irrigation systems.
- Locate and mark above and below ground water lines.
- Locate and mark all above and below ground utilities.
- Coordinate with landowners which utilize pivot irrigation systems.
- Develop grazing deferment plans with landowners, tenants, or other grazing permit holders that address construction timing, fence cutting and bracing, cattle guard locations, and water requirements for livestock.
- Conduct baseline compaction surveys of the existing soil conditions, as requested by the landowner.

Any component of irrigation systems, waterlines, utilities, or other physical impediments encountered during construction will be repaired to at least pre-construction condition.

3.0 GENERAL PIPELINE CONSTRUCTION PROCEDURES

Construction of the main pipeline is planned for five simultaneous construction areas, or "spreads", averaging about 150 miles each. The pump stations will each be constructed by separate construction crews. Construction is planned to start in the second quarter of 2007, and be completed by the end of the year.

TABLE 1.5-1

Construction Spreads for the Overland Pass Pipeline Project

Spread Name	Mileposts	State
Spread 1	0.0 to 146.5	Wyoming
Spread 2	146.5 to 281.0	Wyoming
Spread 3	281.0 to 438.0	Wyoming/Colorado
Spread 4	438.0 to 591.0	Colorado/Kansas
Spread 5	591.0 to 749.4	Kansas

Overland Pass proposes to use a 75-foot-wide construction right-of-way in most locations. Standard pipeline construction is composed of specific activities that make up the linear construction sequence. These operations collectively include survey and staking of the right-of-way; clearing and grading; trenching; pipe stringing, bending, and welding; lowering the pipeline into the trench; backfilling the trench; hydrostatic testing; final tie-ins; commissioning; and right-of-way cleanup and restoration. Construction personnel will be limited to the areas required to conduct these activities and will not be allowed onto off-right-of-way areas unless necessary. Figure 1 shows the typical steps of cross-country pipeline construction.

3.1 Clearing and Grading

Before clearing and grading are conducted, landowner fences will be braced and cut to landowner or land management agency specifications (see Figures 2a – 2c), and temporary gates and fences will be installed to contain livestock if present. A clearing crew will clear the work area of vegetation and obstacles (e.g., trees, logs, brush, rocks). The clearing crew will follow the fence crew and skim surface vegetation in areas of high fire danger to minimize the potential for wildfires. Where trees are felled, timber will be cut to uniform length and stacked along the edge of the right-of-way until disposal or use during reclamation. Stumps will be cut as close to the ground as possible and left in place except over the trenchline or as necessary to create a safe and level work surface.

Grading will be conducted where necessary to provide a reasonably level work surface. More extensive grading will be required in steep side slope or vertical areas to prevent excessive bending of the pipeline. Overland Pass intends to use several topsoil stripping methods during construction. Where the ground is relatively flat and does not require grading, rootstock will be left in the ground.

3.2 Topsoil Removal and Storage

Overland Pass proposes to use three topsoil removal techniques: trenchline only, trenchline plus spoil side, or full right-of-way stripping (see figures 3, 4, and 5).

The 'trenchline only' technique removes topsoil from the trenchline area only. Overland Pass will utilize a method of trenchline stripping called double-ditching (see Figure 6). The double-ditching method requires two passes to be made by a wheel ditcher. On the first pass, the machine removes topsoil from the trenchline and places it on the non-working side of the pipeline trench. On the second pass, the wheel trencher will excavate subsoil and place it on the working side of the pipeline trench, where equipment is allowed to work on top of the spoil pile. Rooted vegetation on either side of the trench will remain in place under the spoil piles. This is intended to minimize the post-construction area of bare soil and to keep most of the topsoil, with its stock of seeds and roots and microbes, in place during construction, which will help in restoring shrub steppe habitat and agricultural land after construction is completed.

In other locations, the trenchline and spoil side and/or the full right-of-way practices will be used. These techniques require a backhoe or bulldozer to remove the topsoil. It is currently anticipated that in arid areas with limited topsoil, topsoil will be removed from the full right-of-way in most areas to avoid pulverization or rutting during wet periods, and in some instances, to mitigate heavy weed infestations. Topsoil and sub-soil piles will be stored separately until reclamation occurs.

On lands managed by the Kemmerer Field Office (KFO), Rock Springs Field Office (RSFO), and Ashley National Forest (ANF), full right-of-way topsoil stripping will occur to a depth of 6-inches. On lands managed by the Rawlins Field Office (RFO) and PNG, 'trenchline only' topsoil stripping will occur to a depth of 6-inches.

Topsoil and subsoil storage piles will be stored separately. In some instances, separation between piles will require the installation of barriers such as straw bales. In other instances, topsoil will be placed on the working side, and trench spoil will be stored on the non-working side. Gaps will be left between the soil piles to prevent stormwater runoff from backing up or flooding adjacent areas. In areas that are prone to wind erosion, Overland Pass will wet down topsoil piles. Wetting down topsoil piles will create a crust across exposed soils and prevent soil loss by wind. EIs will inspect watered soils regularly and re-watering will occur as needed. Water requirements for topsoiling activities are discussed in the "Water Withdrawal Requirements" section of Overland Pass' Hydrostatic Testing Plan (appendix G). **On the**

PNG, soils may be watered. However, since open trench sections will be limited to one mile at a time, backfilling will occur immediately following pipe installation. Therefore, the potential for topsoil loss will be minimal. Tackifiers are not proposed for use during the project.

3.3 Rutting

In areas where topsoil has not been removed, rutting from construction equipment will be considered excessive if greater than 4-inches on BLM and ANF lands, or greater than 3-inches on PNG lands. In consultation with Overland Pass' Environmental Inspectors (EIs) and agency monitors, topsoil removal techniques may be modified to remedy topsoil rutting. Rutting stipulations will not apply in areas where topsoil removal has occurred.

3.4 Rocky Conditions

When rocky conditions are encountered, tractor-mounted mechanical rippers will be used to fracture rock prior to excavation. Rock will be stockpiled along the edge of the construction right-of-way and either used during reclamation or disposed of at an off-site facility. Rock will not be permanently windrowed along the edge of the construction work area.

3.5 Temporary Erosion Control

The installation of temporary erosion controls will begin immediately following topsoil removal. Temporary erosion controls will be properly maintained throughout construction (on a daily basis) and reinstalled as necessary until replaced by permanent erosion controls. Temporary erosion controls that will be used during construction include the following:

3.5.1 Temporary Slope Breakers

Temporary slope breakers are intended to reduce runoff velocity and divert water off the construction right-of-way (see figure 7). Temporary slope breakers may be constructed of materials such as soil, staked straw bales or sand bags.

Overland Pass will install temporary slope breakers to avoid excessive erosion. Temporary slope breakers must be installed on slopes greater than 5 percent where the base of the slope is less than 50 feet from waterbody, wetland, and road crossings at the following spacing:

Federally Managed Lands

Slope (percent)	Spacing (feet)
2 to 5 percent	300 feet
5 to 10 percent	200 feet
10 to 15 percent	150 feet
15 to 25 percent	100 feet
>25 percent	100 feet or EI Recommendation
> 30 percent	25 to 50 feet (*PNG Lands only*)

Non-Federally Managed Lands	
Slope (percent)	**Spacing (feet)**
2 to 5 percent	**300 feet**
5 to 15 percent	**200 feet**
15 to 25 percent	**100 feet**
>30 percent	**100 feet or EI Recommendation**

On slopes less than 5 percent that are located in areas not prone to soil movement or erosion (e.g. rocky soil conditions) slope breakers may be eliminated at the discretion of the EIs and agency monitors. Slope breaker spacing may also be modified to correspond with slope breakers from adjacent facilities.

The outfall of each temporary slope breaker will be directed to a stable, well vegetated area or into an energy-dissipating device at the end of the slope breaker and off the construction right-of-way. The outfall of each temporary slope breaker will be positioned so as to prevent sediment discharge into wetlands, waterbodies, or other sensitive resources. The requirements stated in section 3.5.1 also apply to permanent slope breakers.

3.5.2 Sediment Barriers

Sediment barriers are intended to stop the flow of sediments and to prevent the deposition of sediments into sensitive resources. As shown in figures 8, 9, and 10, they may be constructed of materials such as silt fence, staked straw bales, compacted earth (e.g., drivable berms across travelways), sand bags, or other appropriate materials. Where silt fence is used, J-hooks will be installed at outlets.

At a minimum, Overland Pass will install and maintain temporary sediment barriers across the entire construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody, wetlands, or road crossing until construction is complete. Adequate room will be left between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition.

Where wetlands or waterbodies are adjacent to and downslope of construction work areas, Overland Pass will install sediment barriers along the edge of these areas, to prevent sediment flow into the wetland or waterbody.

In travel lanes, Overland Pass may install drivable berms rather than removable sediment barriers such as straw bales. The EI may specify one technique or the other.

3.6 Trenching

The trench will be excavated by rotary trenching machines, track-mounted backhoes, or other similar equipment to a depth that provides sufficient cover over the pipeline after backfilling. Typically, the trench will be about 4.5 to 5 feet deep (to allow for about 3 feet of cover) and about 3.5 to 4 feet wide in stable soils. Additional cover will be provided at road and waterbody crossings. Less cover is required in rocky areas (18 inches) in open areas; additional cover (30 inches) will be required in rocky areas in commercial and residential areas, roads, and residential ditches. In sandy, unstable soils, the trench could be considerably wider because the walls could cave or slough during trenching. Typically, it will take approximately 4 to 6 weeks from the time the excavator opens the trench until the trench is backfilled. **In the Kemmerer Field Office, open trench sections will be limited to a 10 day period.** It is reasonable to assume that in most areas, up to 10 or 12 miles of trench will be open at a time. **On the Pawnee National Grassland (PNG), open trench will be limited to one mile at a time.**

3.6.1 Open Trench Wildlife Mitigation

Trench plugs will be installed at a maximum of 0.5-mile intervals and at visible wildlife game trails and livestock watering trails that intersect the trench line. **In the Kemmerer Field Office, trench plugs and gaps will be spaced at 0.25 mile intervals.** 20-foot gaps will be left in spoil and topsoil stockpiles at all trench plugs. Suitable ramps will be installed from the bottom of trench to the top with a 5-foot-wide open path across the trench plug. A corresponding gap in the welded pipe string will be left at each trench plug.

3.7 Pipe Stringing, Bending, and Welding

Following trenching, sections of externally coated pipe up to 80 feet long (also referred to as joints) will be transported over public road networks and authorized private access roads to the right-of-way by truck and placed or "strung" along the trench line.

After the pipe sections are strung along the trench and before they are joined together, individual sections of the pipe will be bent where necessary to allow for uniform fit of the pipeline with the varying contours of the bottom of the trench. Typically, a track-mounted, hydraulic pipe-bending machine will tailor the shape of the pipe to conform to the contours of the terrain. Where direction changes require bends greater than what can be properly bent in the field, a factory made "induction bend" will be used. After the pipe sections are bent, they will be welded together into long sections and placed on wooden support skids.

Each weld must exhibit the same structural integrity with respect to strength and ductility as the pipe. Welds will be inspected by quality control personnel utilizing either X-ray techniques or other DOT-approved non-destructive examination to determine the quality of the weld, required in Title 49 CFR Part 195. Welds that do not meet established specifications will be repaired or removed. Once the welds are approved, a protective FBE coating will be applied to the welded joints. The pipeline will then be electronically inspected or "jeeped" for faults or voids in the epoxy coating, and visually inspected for any faults, scratches, or other coating defects. Damage to the coating will be repaired before the pipeline is lowered in.

3.8 Lowering-in, Trench Dewatering, and Backfilling

Before the pipeline is lowered in, the trench will be inspected to be sure it is free of wildlife that may be trapped in the trench as well as rocks and other debris that could damage the pipe or protective coating. In rocky areas, padding material such as finer grain sand, soil, or gravel will be placed in the bottom of the trench to protect the pipeline. No topsoil will be used as padding material. The pipeline may also be wrapped in a rock shield, which is typically made of fabric or screen. Excess rock will be removed from at least the top 12 inches of soil in all actively cultivated or rotated cropland and pastures, hayfields, residential areas, and on the PNG.

During construction, open trench sections may fill with water due to weather events. In these instances, trench sections will be dewatered by pumping water out and disposing of it in an upland area, or into sediment filtration/energy dissipation device, within the approved workspace. Dewatering devices will typically be located on the edge of the 75-foot construction right-of-way. See Overland Pass' Stormwater Pollution Prevention Plan (SWPPP).

Backfilling with occur within 20 days of trenching in most areas and within 10 days in residential areas. Trench breakers may be installed (see section 3.13.1), where needed. Soils will be replaced from the horizon in which they occur. First, subsoil will be returned to the trenched area. Topsoil will be replaced last at the ground level. **On the PNG, excavated bedrock will be broken up and returned to the**

original bedrock stratum. Soil will be mounded over the trench only to allow for normal soil settling. No crown will be installed over the trench line.

NOTE: In order to comply with the PNG's requirement of one mile of open trench at any one time, Overland Pass may implement the above construction sequencing activities by utilizing a "mini spread" approach whereby each of the above steps is performed in a shorter than normal time by a single construction crew. Consequently, since the trench will be backfilled immediately upon pipe lowering-in, Overland Pass does not propose to utilize tackifiers, as requested by PNG. Spoil and topsoil storage would typically be limited to only 2 or 3 days using this approach.

3.9 Hydrostatic Testing

After backfilling, the pipeline will be hydrostatically tested with pressurized water to ensure the system is capable of withstanding the operating pressure for which it is designed. The pipeline will be broken into 'test segments'. These test segments have been determined by water availability, water permitting requirements, and terrain. Water for hydrostatic testing will be obtained from a combination of groundwater and surface water sources through specific agreements with landowners and permit stipulations. Internal test pressures and durations will be tested at a pressure 25 percent greater than the maximum operating pressure, in accordance with Title 49 CFR Part 195. If leaks are found, the leaks will be repaired and the section of pipe retested until specifications are met.

Following testing, the hydrostatic test water will be discharged to stable, upland areas along the construction right-of-way. If well vegetated areas are not available, water may be discharged through filtration bags or other energy dissipating devices. In some cases, water may be sprayed on agricultural fields as irrigation in coordination with the landowners. **On the PNG, sediment filtration bags will be used in all instances during water discharge.**

After completion of hydrostatic testing, the pipeline will be cleaned and dried using mechanical tools (pigs) that are moved through the pipeline with pressurized, dry air. Details related to hydrostatic testing, including water requirements, withdrawal and discharge locations, aquatic mitigation techniques used during withdrawal, and discharge mitigation techniques, are located in the *Hydrostatic Testing Plan* in Appendix G.

3.10 Tie-Ins, Commissioning, and Markers

Following successful hydrostatic testing, test manifolds will be removed and the final pipeline tie-ins will be made.

After final tie-ins are complete, the tie-in welds have been inspected, and the line is sufficiently dried, pipeline commissioning will commence. Commissioning involves activities to verify that equipment is properly installed and working, the controls and communications systems are functional, and that the pipeline is ready for service. Finally, the pipeline will be cleaned and dried using mechanical tools (pigs) and prepared for service by purging the line of air and loading the line with NGL.

Markers showing the location of the pipeline will be installed at fence and road crossings in order to identify the owner of the pipeline and convey emergency information in accordance with applicable governmental regulations, including DOT safety requirements. Special markers providing information and guidance to aerial patrol pilots will also be installed.

3.11 Decompaction

Once backfilling has been completed decompaction will occur. Both top- and subsoils may be decompacted. Soil will be tested at regular intervals in disturbed areas using penetrometers or other appropriate devices. Similar soil types under similar moisture conditions will be examined in disturbed areas and in undisturbed, off-right-of-way areas to approximate preconstruction conditions.

In compacted soils, Overland Pass will scarify or rip the area to a depth of 6 to 12 inches using a chisel or para-plow, or other similar tillage equipment until the soil density is comparable to areas off the construction right-of-way. If ripped, the ripper shanks will be set apart 12 to18 inches. Topsoil will be replaced after decompaction is completed. Sandy soils will not be scarified.

If severely compacted agricultural areas are encountered, they will be plowed with a paraplow or other deep tillage implement. If the topsoil has a bulk density of 15 percent or greater, it will be decompacted with a harrow plow or other deep tillage equipment prior to seeding and mulching. **On the PNG, the entire length of the right-of-way will be ripped to a depth of at least 12 inches using the required compaction reduction tool which is equipped with winged shanks.**

3.12 Cleanup

Cleanup will begin after backfilling as soon as weather and site conditions permit. During cleanup, construction debris on the right-of-way will be disposed of at off-site facilities. All work areas will be graded and restored to preconstruction contours as closely as possible.

During cleanup, a travel lane may be temporarily left open to allow access by construction traffic. Interim erosion control structures will be inspected and maintained during this period. When access is no longer required, the travel lane will be removed and the right-of-way restored.

Where requested by the landowner or agency monitor, Overland Pass may restrict access to the newly created right-of-way by unauthorized vehicles at public access points by installing gates, boulders, or other barriers.

3.13 Permanent Erosion Control

Permanent erosion controls will be installed immediately following clean up and backfilling, usually within 20 days of backfilling in most areas, or 10 days within residential areas. Permanent erosion controls will provide long-term stability to the right-of-way and prevent excessive soil erosion and divert water to stable areas adjacent to the pipeline.

3.13.1 Trench Breakers

Trench breakers are intended to slow the flow of subsurface water along the closed trench. Trench breakers may be constructed of materials such as sand bags or polyurethane foam; topsoil will not be used to serve as a trench breaker. Figure 11 shows trench breaker installation.

Trench breaker locations will coincide with slope breakers, unless the EIs or agency monitors recommend modified spacing. Spacing intervals for trench breakers will be the same as those described for temporary and permanent slope breakers in section 3.5.1.

At a minimum, Overland Pass will install a trench breaker at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland.

3.13.2 Permanent Slope Breakers

Permanent slope breakers are intended to reduce runoff velocity, divert water off the construction right-of-way, and prevent sediment deposition into sensitive resources. Permanent slope breakers may be constructed of materials such as soil, sand bags, or some functional equivalent. In the absence of a stable, adjacent areas, energy-dissipating devices will be constructed at the end of the breaker. Slope breaker spacing may also be modified to correspond with slope breakers from adjacent facilities.

Slope breakers may extend slightly (about 4 feet) beyond the edge of the construction right-of-way to effectively drain water off the disturbed area. Where slope breakers extend beyond the edge of the construction right-of-way, they will be subject to compliance with all applicable survey requirements.

Overland Pass will construct permanent slope breakers in all areas with slopes greater than 5%. Spacing for permanent slope breakers will be the same as temporary slope breakers described in section 3.5.1.

3.14 Seedbed Preparation

In upland soils not compacted during construction, Overland Pass will disk or harrow the disturbed construction right-of-way approximately 2 to 6 inches deep to roughen the surface to enhance water and root penetration. Drag chains pulled by a tractor or tracked equipment may also be used to rough grade certain portions of the construction work areas.

3.14.1 Mulching

Overland Pass will apply 1.5 tons per acre of clean, weed-free straw mulch to dry, sandy areas and areas with slopes exceeding 10 percent, or at the request of the landowner. **On the PNG, mulch will be uniformly crimped at a rate of 2.5 tons per acre.** In actively cultivated cropland and in areas where surface rock is greater than 4 inches in diameter and exceeds at least 20 percent surface coverage after rough grading, mulch will not be applied unless otherwise requested by the landowner. Mulch will be applied concurrent with or immediately after seeding, where necessary to stabilize the soil surface and to reduce wind and water erosion. Mulch will be uniformly spread over at least 75 percent of the ground surface in disturbed areas to minimize the effects of water and wind erosion and to preserve moisture in areas requiring vegetation. Mulch will be mechanically anchored by disking or punching so that straw strands are compressed into the soil at three to four inches deep, depending the percent slope.

Woody vegetation cleared from the right-of-way may be stored for use as mulch to be spread over the right-of-way following seeding and mulching, if required. A backhoe with a hydraulic thumb or equivalent apparatus operating on the edge of the right-of-way will randomly distribute woody vegetation across the restored right-of-way to create a visual barrier.

If final grading and installation of permanent erosion control measures are delayed and cannot be completed before the following spring, Overland Pass will apply mulch on slopes greater than 5 percent that contain less than 20 percent surface rock greater than 4 inches in diameter. Mulch will provide temporary erosion control until permanent erosion control measures can be installed. **On federal land, steep slopes over 20 percent that are prone to erosion will be stabilized with erosion control fabric or pocking.**

Trees which were not completely removed from the trenchline will be cut off at ground level and stockpiled for use during reclamation. During reclamation, trees will be moved back across the right-of-way and walked over with construction equipment.

Excess rock will be stockpiled along the side of the construction right-of-way for use during reclamation. During reclamation, rock will be spread back across the right-of-way to blend it with adjacent areas. Excess rock which cannot be utilized will be collected and hauled to an off-site disposal facility. Rock will not be windrowed along the edge of the right-of-way.

3.14.2 Seeding Methods

Overland Pass will generally use one of four seeding methods, including seed drill, mechanized broadcast (cyclone) seeder on a tractor, and hand cyclone seeder.

A seed drill will be used to distribute seed on the right-of-way where slopes and soil conditions allow. The seed drill will be calibrated according to the manufacturer's recommendations prior to use and a known amount of seed will be used over a known area to monitor the calibration of the equipment. The average drilled seed depth will be 0.25 to 0.50 inch, not to exceed one inch in depth. Care will be taken to ensure light seed (e.g., winter fat) is evenly applied with heavier seed. In Wyoming and Colorado, sagebrush seed distribution may be increased in areas where sagebrush naturally occurs in denser clusters.

A hand-operated or mechanically powered cyclone seeder will be used when a seed drill is not suitable. The seeding rate will be doubled where a broadcast seeder is used. This method distributes the seeds on the surface and the seeds are subsequently covered by use of a cultipacker, rake, or dragging a chain behind the seeding equipment. Hand-operated cyclone seeders will be used on slopes too steep for equipment to be operated safely. If rock is not present in these areas, hand dragging or raking will be used to incorporate the seed.

Hydroseeding and hydromulching are not expected to be used except in areas where conventional seeding and mulching techniques cannot be applied (i.e., slopes exceeding 25 percent), or when requested by the landowner. The seeding rate during hydroseeding will be broadcast application rate (i.e., twice the drilled rate). Mulch will be applied at a rate of 1.5 tons per acre and will be anchored with a tackifier on slopes exceeding 25 percent. **On the PNG, mulch will be uniformly applied at the rate of 2.5 tons per acre.**

General seeding of disturbed areas will occur in accordance with written recommendations for preparation, rates, methods, and dates obtained from the local soil conservation authority or as requested by the landowner. Appendix E contains Overland Pass' index of site-specific seeding recommendations.

Seeding will typically occur immediately following restoration. In some areas seeding may be delayed by weather. In these instances, seeding will occur in the following spring. **On federal lands, seeding will take place immediately after re-grading, but no later than 20 days after regrading is completed, regardless of the time of year, unless severe weather precludes these activities**. In areas where sagebrush seed is a component of the seed mix, sage may be separately spread in winter of the same year, during a second pass, to facilitate growth. Sagebrush seed mixes may be applied even if snow cover is present.

If seeding cannot be done within the recommended seeding dates, the appropriate interim erosion control measures discussed in section 3.5 will be installed and seeding of permanent vegetation will be performed at the beginning of the next season. Lawns may be seeded on a schedule established with the landowner.

3.14.3 Tree Replanting Methods

Where required by the landowner or permit conditions, tree cuttings, containerized plants, or transplants, will be used to restore woody plant communities, stabilize riparian areas, and provide a visual screens to conceal the right-of-way. Species include willow, cottonwood, and aspen. Willow species will be planted as non-rooted cuttings; and cottonwood as rooted cuttings. Tree cuttings will be obtained from adjacent areas within the surveyed corridor that were identified and approved by the landowner. Locally obtained tree cuttings will be used to ensure that plants are adaptable to the environment.

Tree cuttings will be between 16 and 24 inches long and obtained during the dormant season (February to May) and planted within two weeks of cutting, or stored under refrigeration, until needed.

Willow and aspen cuttings will be spaced with an average of 10 feet/center (for example: an area 50-feet by 100-feet will require 50 trees set at 10-foot spacings). Cottonwoods will be spaced at 15 feet/center. Plantings will be randomly placed to promote a natural distribution, but the recommended average plant density will be maintained. Species will not be planted within 15 feet either side of the pipeline.

Tree cuttings will be inserted into the ground approximately 6 inches and will be covered with a fine plastic netting to deter browsing.

In areas where access along the right-of-way is required for vehicular travel to hydrostatic test section tie-ins, pipeline drying, or valve sites, the travel lane may not be restored or seeded concurrently with right-of-way restoration. A separate crew will restore the travel lane when contractor access along the right-of-way becomes unnecessary.

4.0 SPECIAL PIPELINE CONSTRUCTION PROCEDURES

In addition to standard pipeline construction methods, Overland Pass will use special construction techniques where warranted by site-specific conditions. These special techniques will be used when constructing across paved and unpaved roads, railroads, utility crossovers, steep terrain, unstable soils, waterbodies, wetlands, when blasting through rock, or avoiding sensitive resources.

4.1 Road, Highway, Railroad, Foreign Utility Crossings

Construction across paved roads, highways, and railroads will be in accordance with the requirements of Overland Pass' road and railroad crossing permits and approvals. Major paved roads, highways, and railroads generally will be crossed by boring beneath the road or railroad (see figure 12). Boring requires the excavation of a pit on each side of the feature, the placement of boring equipment in the pit, then boring a hole under the road at least equal to the diameter of the pipe. Once the hole is bored, a prefabricated pipe section will be pulled through the borehole. For long crossings, sections may be welded onto the pipe string just before being pushed through the borehole. There will be little or no disruption to traffic at road, highway, or railroad crossings that are bored. These boring techniques may also be used to avoid specified eligible archaeological sites.

Most smaller, unpaved roads and driveways may be crossed using the open-cut method where permitted by local authorities or private owners (see figure 13). The open-cut method will require temporary closure of the road to traffic and establishment of detours. If no reasonable detour is feasible, at least one lane of the road being crossed will be kept open to traffic, except during brief periods when it is essential to close the road to install the pipeline. Most open-cut road crossings will be completed and the road resurfaced in a few days. Overland Pass will take measures such as posting signs at open-cut road crossings and utilizing flagmen to ensure safety and minimize traffic disruptions.

Additionally, Overland Pass is developing a *Traffic and Transportation Management Plan* (see Appendix F). The *Traffic and Transportation Management Plan* is intended to mitigate potential impacts of project-related road use and construction activity, and to maintain and/or moderately upgrade existing access roads, consistent with project needs relating to the useful management of resources. Overland Pass is currently working with the counties crossed by the pipeline route to obtain permits and develop road mitigation that might be necessary for construction and post-construction of the project. No new roads will be built as part of the Proposed Action. Driveway installation to permanent, aboveground facilities are depicted on the aboveground facility plot plans located in Appendix C.

Foreign pipeline crossing designs will conform to good engineering practices and to the requirements of the regulatory authority (e.g., DOT, County Department of Public Works). Crossings of railroads and roads, where required by the regulatory authorities, will be installed using boring techniques and will possess a heavier wall pipe thickness for additional structural protection.

4.2 Side Slope Cutting and Steep Terrain

Side slope cutting will occur in rough, steep terrain, and in areas where rerouting the pipeline is not feasible due to mitigating factors such as sensitive resource avoidance, paralleling road ways, existing utilities, etc. Where the pipeline crosses laterally along the side of a slope, cut and fill grading may be required to obtain a safe, flat work terrace. Generally, on steep side slopes, soil from the high side of the right-of-way will be excavated and moved to the low side of the right-of-way to create a safe and level work terrace. After the pipeline is installed, the soil from the low side of the right-of-way will be returned to the high side, and the slope's original contours will be restored (see Figure 14 for workspace requirements and layout). Mulch will be applied at a rate of 1.5 tons per acre and will be anchored with a tackifier on slopes exceeding 20 percent.

Steep terrain areas in excess of 10 percent are common in portions of Wyoming. When disturbed by construction through vegetation removal, these areas may be susceptible to erosion if water from snowpack runoff and intense rainfall events are not controlled. In some instances, pipe sections required in these areas will be factory bent to facilitate installation.

Based on site-specific conditions, Overland Pass has identified measures that will be implemented to prevent slope failure. The EIs and agency monitors may modify these mitigation measures on a case-by-case basis. Table 4.3-1 lists the locations of steep slope areas by milepost and the soil/seed mix combination that will be used to stabilize these areas.

4.2.1 Stockpiling

On steep slopes where topsoil, woody debris, and rock cannot be conventionally stockpiled at the edge of the construction right-of-way, the contractor will push the material to ATWS for use during restoration.

4.2.2 Temporary Slope Breakers

Temporary slope breakers will be installed after the right-of-way is graded. In most cases, temporary slope breakers will be spaced at intervals determined by the EI. A temporary breaker will be installed 10 to 30 feet from the crest of a slope to act as a reference point for spacing the remaining breakers. Slope breakers will be inspected on a daily basis in areas of active construction; on a weekly basis in areas with no active construction; within 24 hours of each 0.5-inch or greater rainfall.

Temporary slope breakers may be omitted where the surface is predominately rock and the potential for erosion is minimal.

4.2.3 Trench Breakers

Trench breakers will be constructed at intervals determined by the EI where surface drainages parallel the trenchline. In addition, trench breakers will be installed at the base of steep slopes adjacent to waterbodies.

Recontouring and Slope Reduction

Special attention will be given to shaping the construction right-of-way to direct runoff into existing drainages off the right-of-way. Cut and fill slopes will have the slope reduced to 3:1 or 4:1 ratio or to match the adjacent utility right-of-way to aid in reclamation and stabilization. If necessary, energy dissipation devices may be installed at the bases of cut and fill slopes to prevent scour in adjacent steep banks not located in the construction right-of-way.

4.2.4 Permanent Slope Breakers

Permanent slope breakers will be installed near the top of a slope, typically within 10 to 30 feet of the crest of a slope, to act as a reference point for spacing the remaining breakers. Spacing of the remaining breakers will be determined by the EI. When deciding on the placement interval of permanent slope breakers, the EI will attempt to match then to breakers located on adjacent rights-of-way.

Where the ground surface is naturally rocky and resistant to erosion, permanent breakers may be omitted or the spacing increased at the discretion of the EI.

Mulch Crimping and Punching

If mulch is applied, it will be crimped or "punched" into the topsoil. Crimping and punching involves a two pass application of 1.5 tons per acre of weed-free straw to an area. After the first application of mulch and seed is applied, the material will be crimped into the soil by hand, or with a disk, or "punched" into the surface with a footed roller pulled by a tractor. Following the first mulch application and seeding/fertilizing, a second layer of mulch will be applied and anchored.

Use of a nondirectional footed roller is the preferred method to anchor mulch. This device creates depressions in the soil surface, increases soil contact with the seed, and holds the soil in place. Punching reduces the potential for wind erosion and provides an environment conducive for moisture retention and germination. Punching will not be used in rocky areas.

If mulch is crimped into the surface by a disk, the crimping pattern will be cross hatched to prevent the creation of down slope furrows that could channelize runoff. Mulch will not be crimped in rocky areas.

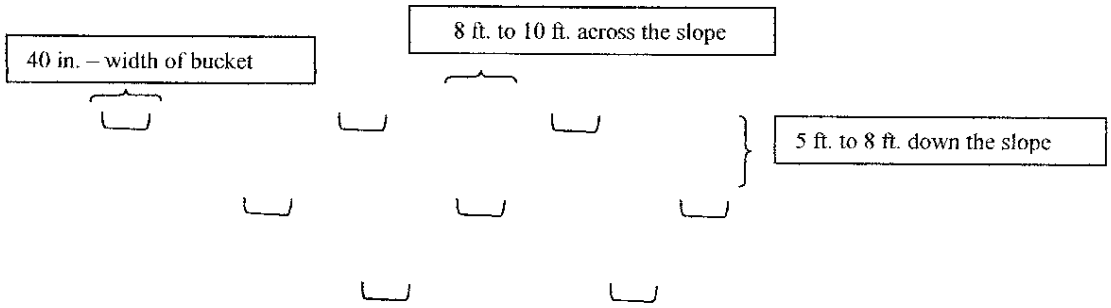
Erosion control fabrics (*i.e.*, jute matting, straw blankets with plastic netting, or curlex) may be substituted for straw mulch on steep, unstable slopes where mulch cannot be applied by mechanical means because of safety concerns. Fabric should overlap by 4 to 6 inches and be stapled or staked into the soil.

4.2.5 Rock Mulch

Rock mulch will be used to control erosion in areas that have a native gravel, cobble, boulder, or bedrock surface. Rock salvaged and stockpiled from these areas during construction will be distributed over the construction right-of-way during restoration and seeded with broadcast seeder. The gaps in the rocks will provide a micro environment beneficial to seed germination by allowing moisture to collect and provide protection from wind. A rock cover will also blend the construction right-of-way into undisturbed areas.

4.2.6 Pocking

In some instances, mulch and erosion control fabrics may not be used. In many areas where slope is 10 percent or greater, Overland Pass will utilize a technique called "pocking". Pocking creates a seedbed which is conducive to the establishment of permanent vegetative cover that will stabilize steep areas, provide forage for wildlife, and create an aesthetically compatible reclaimed right-of-way to that of adjacent areas. Pocking will involve creating a series of regularly spaced depressions, or mini terraces, using a backhoe. The depressions are the width of a standard backhoe bucket and are approximately 8-inches to 12-inches in depth. The following schematic outlines generally how the pocking technique occurs.



The small depressions retain water runoff, creating a more mesic site to facilitate seed germination and subsequent seedling establishment. They will also minimize the potential for rill and gullies to form by diverting runoff and retaining a large portion of collecting precipitation. The depressions are offset from one another in order to minimize the potential that lower terraces would fail should a terrace above it fail. Where pocking is used, permanent slope breakers will not be used.

4.3 Soils Mitigation and Seed Mixes

To promote the optimum regrowth potential for areas with difficult soils, Overland Pass has conducted a detailed analysis of soils along the pipeline route which assessed areas which contain shallow soils, saline/sodic soils, droughty soils, highly erodible soils, and those with a high potential for flooding. Slope, geomorphologic features, and vegetative cover were also factored into the analysis. The results of the analysis combined all factors, along with Overland Pass field personnel's knowledge of problem areas based on adjacent project rights-of-way or other factors, to produce recommendations for site-specific mitigation and seed mixes which are best suited to these areas. The resulting mitigation will produce a stable right-of-way and maximize regrowth potential for the reclaimed areas. The following soil types are discussed in table 4.3-1 along with proposed seed mixes.

4.3.1 Shallow Soils

On steep slopes, shallow soils are extremely erosive. Rooting depth is limited and the soils have limited water storage capacity. These areas are discussed as shallow, shallow rock, bedrock, and bedrock outcrop areas.

4.3.2 Salinity/Sodicity

Saline soils are the result of accumulated soluble salts in concentrations that can prevent plants from taking water and therefore severely limit germination potential. Sodic soils are the result of accumulated sodium which crusts at the ground surface. Plant germination is reduced the potential for root penetration

is greatly reduced. In many areas, these soils are found together and are therefore discussed together in this plan. These areas are discussed as saline or salinity/sodicity, high water table areas, sodic shales, or marine shales.

4.3.3 Droughty Soils

Droughty soils occur as a result of soil texture, landscape position, aspect and slope. There are several areas along the pipeline route which contain these soils. They typically occur in south and west aspects, sandy flat areas, and steep slope areas with limited water holding capacity where run off is a problem. These areas are discussed as sandy, droughty, elevated terrace, steep slope, or coarse alluvium, fragment, or textured areas.

4.3.4 Flooding Soils

These areas include waterbody "low bottoms" that are prone to flooding. These areas are discussed as flooding or unstable areas.

4.3.5 Highly Erodible Soils

Highly erodible soils are typically found in association with steep slopes and are often dictated by substrate. Erosion and deposition are issues that affect the potential for successful revegetation. These areas are discussed as steep slope or unstable areas.

4.4 Waterbody Crossings

4.4.1 Notification

Overland Pass will provide written notification to the authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least 1 week before beginning work in a waterbody, or as otherwise specified by that authority. Additionally, Overland Pass will notify the appropriate state authorities at least 48 hours before beginning trenching or blasting within the waterbody, or as specified in state permits.

4.4.2 Installation

A total of 97 perennial waterbodies will be crossed by the pipeline (some waterbodies are crossed multiple times; see Appendix 3A of EIR 3). Of these perennial waterbody crossings, 70 are in Wyoming, 10 are in Colorado, and 17 in Kansas. Of the total, six perennial waterbody crossings are located on federally-managed lands. Overland Pass proposes to cross the majority of the perennial waterbodies using the open-cut, flume, or dam and pump methods depending on whether or not they are flowing at the time of construction. The horizontal directional drill (HDD) method will be used to cross the Green and South Platte Rivers. In crossing waterbodies, Overland Pass will adhere to the requirements of its waterbody crossing permits. Site-specific crossing plans are located in Appendix D.

The project will also cross 789 intermittent waterbodies (some waterbodies are crossed multiple times; see Appendix 3A of EIR 3). Many of these waterbodies are dry washes. If these waterbodies are dry when crossed, Overland Pass will use conventional upland cross-country construction techniques. If the waterbodies are flowing when crossed, Overland Pass will use the open-cut, flume, or dam and pump methods, described below. At ditches lined with concrete and aqueducts made out of pipe, Overland Pass will use the bore crossing method depicted in Figure 18.

Additional temporary workspace areas will be required on both sides of all waterbody crossings to stage construction, fabricate pipe, and store materials. On non-federally managed land, these additional

temporary workspace areas will generally be located at least 10 feet away from the water's edge. **On federally managed land, these additional temporary workspace areas will be located at least 50 feet away from the water's edge.** However, should water not be flowing at the time of construction, upland construction techniques will be used. The typical dimensions and locations of additional temporary workspace areas are listed in table 1.4.1-1 and Appendix 9D of EIR 9.

4.4.3 Bridges

Before construction, temporary bridges may be installed across all perennial waterbodies greater than 30 feet across which are flowing, or contain standing water, at the time of construction to allow construction equipment to cross. Construction equipment will be required to use the bridges, except for clearing crews which will be allowed one pass through a waterbody before the bridges can be installed.

Equipment bridges will consist of one of the following: clean rock placed over flume pipes; prefabricated construction mats; rail flat cars placed over the waterbody with or without a culvert; or flexi-float or other temporary bridging, such as Bailey bridges (see Figures 19 and 20 for bridge layouts). Bridge locations, types, and widths are depicted in site-specific plans.

4.4.4 Open Cut Crossing Method

For open-cut crossings, clearing adjacent to waterbodies will involve the removal of trees and brush from the construction right-of-way and additional temporary workspace areas. Woody vegetation within the construction right-of-way will be cut at ground level and cleared to the edge of the waterbody. Sediment barriers may be installed at the top of the streambank if no herbaceous strip exists. Initial grading of the herbaceous strip will be limited to the extent needed to create a safe approach to the waterbody and to install a bridge.

During clearing, sediment barriers will be installed and maintained across the right-of-way adjacent to a waterbody and within additional temporary workspace areas to minimize the potential for sediment runoff. Silt fence and/or straw bales located across the working side of the right-of-way will be removed during the day when vehicle traffic is present and will be replaced each night. Alternatively, drivable berms may be installed and maintained across the right-of-way in lieu of silt fence and/or straw bales.

Once the trench is excavated, the prefabricated segment of pipe will be installed in the trench. Most pipe installed under a waterbody will be coated with concrete or equipped with set-on weights to provide negative buoyancy. The trench will then be backfilled with native streambed spoil. Overland Pass will complete all in-stream work within 24 hours for all minor waterbodies crossings and within 48 hours for intermediate waterbody crossings.

<u>Sediment Control</u>

Silt fence, or equivalent, will be installed and anchored along the banks of waterbodies. Sediment control devices will be maintained until revegetation of adjacent areas is considered successful or the area is stabilized. Permanent diversion berms will be constructed at the base of slopes near waterbodies, unless otherwise specified by the land-managing agency or the EI.

<u>Trench Plugs</u>

Earthen trench plugs will be left in place on both banks of the waterbody until immediately before pipe installation. This will separate the waterbody trench from the upland trench to prevent water from being diverted into the upland portions of the pipeline trench and to keep muddy water that accumulates in the upland trench from flowing into the waterbody.

Pipeline Burial Depth

The pipeline will be installed at a depth below the bed of washes and wetlands that is consistent with DOT pipeline design and operating code as set forth in *49 CFR, PART 195-TRANSPORTATION OF HAZARDOUS LIQUIDS BY PIPELINE*, to prevent exposure of the pipeline and maintain the integrity of the system in event of a flash flood.

Backfill Material

Excavated material will be used for trench backfill in perennial streams and dry washes, unless expressly permitted otherwise by the BLM, the COE, or state regulatory agency. Backfilling will begin as soon as practical after installation of the pipe and reestablishment of the streambanks. In coldwater fisheries, the top one foot of the trench will be filled with clean gravel or native cobble.

If blasting is required for installation in a waterbody, the trench will be backfilled with native rock that was removed during blasting activities.

Streambed and Bank Stabilization

Original channel configurations will be reestablished, and the banks replaced, compacted, and restored to the original condition. Banks may be graded to a more stable configuration if eroding or unstable conditions were present prior to construction.

To provide additional erosion control, Overland Pass will use erosion control fabrics (*e.g.*, jute matting, straw blankets with plastic netting, or curlex) on the banks of washes and waterbodies where steep slopes and a minimum of natural rock are present. A permanent slope breaker will be installed at the base of any slope leading to a waterbody.

If required, Overland Pass will install temporary fences at the edges of waterbodies to prevent grazing cattle from disturbing the area before a mature vegetative cover is established.

The banks of perennial streams will be seeded with mixes listed in Appendix E. Dry wash bottoms will not be seeded.

Incised Banks

Areas where incised banks are crossed will be constructed and restored as outlined in Overland Pass' Incised Bank Stabilization Plan (appendix O).

4.4.5 Flume Crossing Method

The flume crossing method will involve diverting the flow of water across the trenching area through one or more flume pipes placed in the waterbody (see figure 22). The first step in the flume crossing method will involve placing a sufficient number of adequately sized flume pipes in the waterbody to accommodate the highest anticipated flow during construction. After placing the pipes in the waterbody, sand or pea gravel bags, water bladders, or metal wing deflectors will be placed in the waterbody upstream and downstream of the proposed trench. These devices will serve to dam the stream and divert the water flow through the flume pipes, thereby isolating the water flow from the construction area between the dams. Leakage from the dams, or subsurface flow from below the waterbody bed, may cause water to accumulate in the isolated area. As water accumulates in this area, it may be periodically pumped out and discharged into energy dissipation/sediment filtration devices, such as a geotextile filter bag or straw bale structure, or into well-vegetated areas away from the water's edge. Trackhoes located on both banks of the waterbody will excavate a trench under the flume pipe in the dewatered streambed. On non-federally managed land, spoil excavated from the waterbody trench will be placed or stored a minimum of 10 feet from the edge of the waterbody. **On federally managed land, spoil excavated from**

the waterbody trench will be placed or stored a minimum of 50 feet from the edge of the waterbody. However, should water not be flowing at the time of construction, upland construction techniques will be used. Once the trench is excavated, a prefabricated segment of pipe will be installed beneath the flume pipes. The trench will then be backfilled with native spoil from the waterbody bed. The banks will be stabilized before removing the dams and flume pipes and returning flow to the waterbody channel.

4.4.6 Dam and Pump Crossing Method

Overland Pass may use the dam and pump crossing method as an alternative to the flume crossing method. The dam and pump method is similar to the flume method except that pumps and hoses will be used instead of flumes to move water around the construction work area (see figure 23). The technique involves damming the waterbody with sandbags and/or steel plates upstream and downstream of the trench area. Pumps will be set up at the upstream dam with the discharge line routed through the construction area, discharging water immediately downstream of the downstream dam. Water flow will be maintained through all but a short reach of the waterbody at the actual crossing. The pipeline will be installed in the isolated area between the dams at least 5 feet below the streambed. After backfilling, the dams will be removed and the banks restored and stabilized.

On the PNG, construction across waterbodies that are flowing at the time of construction may be delayed for two days. Overland Pass will use open cut crossing methods if the construction delay results in the waterbody drying up due to a weather event. If delaying construction does not achieve this objective, intermittent waterbodies that are flowing at the time construction will be crossed using either the flume or dam and pump crossing method.

4.4.7 Horizontal Directional Drill Method

The HDD method will only be used for the South Platte and Green River crossings (see site-specific crossing plans in Appendix D).

The first step of HDD will be to drill a small-diameter pilot hole from one side of the crossing (entry side) to the other (exit side). Drilling will be achieved using a powered drill bit. The drilling fluid, commonly referred to as mud, will be a mixture of water and bentonite (a naturally occurring clay mineral), which will be pumped into the drill hole through the drill pipe during the drilling process. The pressure of the drilling mud will transmit hydraulic power through the drill bit, transport cuttings to the surface, lubricate the drill bit and stabilize the drill hole. Water, the main ingredient of drilling mud, will be obtained from the waterbody during drilling or will be trucked in from another source. Small pits will be dug at or near the entry and exit holes to temporarily store the mud and cuttings. The mud and cuttings will be pumped from the temporary storage pits to an on-site recycling unit where the bentonite clay will be processed for reuse.

As drilling the pilot hole progresses, segments of drill pipe will be inserted into the pilot hole to extend the length of the drill across and under the waterbody. The drill bit will be steered and monitored throughout the process to maintain the designated path of the pilot hole. To assist in steering, a sensor grid may be established on the surface on both the entry and exit sides of the horizontal directional drill. The sensor grid will be fabricated by installing several stakes along and above the drill path and wrapping them with an insulated coil wire. The coil wire will be then energized with a portable generator, which creates a magnetic field to help track the drill bit path.

Once the pilot hole is complete, the sensor grid will be removed and the hole will be enlarged to accept the pipeline. To enlarge the pilot hole, a larger reaming tool will be attached to the end of the drill pipe on the exit side of the hole. The reamer will then be drawn back through the pilot hole to the drill rig

(entry side). Drill pipe sections will be added to the rear of the reamer as it progresses toward the rig, thereby allowing a string of drill pipe to remain in the hole at all times. Typically, several passes of consecutively larger reaming tools are required before the hole will be of sufficient size. The final hole will be approximately 1½ times larger than the pipeline to be installed (or approximately 24 inches in diameter).

The pipeline segment to be installed beneath the waterbody will be fabricated into one section on the right-of-way on the exit side of the crossing. The pipe segment will be radiographically inspected and/or hydrostatically tested prior to installation. After the hole is completed, the pipeline segment will be attached to the drill pipe on the exit side of the hole and pulled back through the drill hole toward the drill rig.

Once the pipeline is installed, excess drilling mud will be collected and incorporated into the soil in an upland area or disposed of at an appropriate facility. If water will be left over from the drilling process, it will be discharged into a well-vegetated upland area or into an energy dissipation/sediment filtration device, such as a geotextile filter bag or straw bale dewatering structure at the site.

Ideally, horizontal directional drilling involves no disturbance to the bed or bank of the waterbody being crossed. However, if a natural fracture or void in the ground is encountered, an unexpected release of drilling mud to the environment could occur. Unconsolidated gravel, coarse sand, and fractured bedrock all present circumstances that increase the likelihood of drilling mud releases. These areas present paths that can run laterally or vertically. If drilling mud moves laterally, the release may not be evident on the ground. For a release to be evident, there must be a flow path extending vertically from the drill hole to the surface. The volume of mud released will be dependent on a number of factors, including the size of the fault, the permeability of the geologic material, the viscosity of the drilling mud, and the pressure of the hydraulic drilling system.

Releases to surface generally occur above or near the drill path. If a wetland or waterbody is present, drilling mud could be released into the wetland or waterbody. In the event drilling mud is released on surface, including within a wetland it will be immediately contained with straw bales, silt fence, or berms. A small pit may be immediately dug at the release site to contain its spread, and a pump will be used to transfer the drilling mud from the pit and into a containment vessel.

A drilling mud release to a waterbody will be more difficult to contain because mud is quickly dispersed into the water and carried downstream. In the event of a release to a waterbody, an attempt may be made to plug the fault by lowering the drilling pressure and thickening to the drilling mud, with additional bentonite, or other non-hazardous materials that are compatible with the drill equipment being used.

The *Horizontal Directional Drilling Inadvertent Release Control Plan* describes the prevention, detection, monitoring, notification, and corrective action procedures in the event of an inadvertent release of drilling fluid should the HDD method be used (see section 1.5.3.14).

In most cases, horizontal directional drilling can be completed in spite of an inadvertent drilling mud release. However, in rare situations, horizontal directional drilling may entirely fail and the waterbody may not be able to be crossed using this method. The presence of outwash interspersed with boulders and cobbles, fractured bedrock, or non-cohesive coarse sands and gravels increase the likelihood drilling may fail due to refusal of the drill bit or collapse of the bore hole in non-cohesive, unstable substrate. In the event that an HDD fails prior to completion, Overland Pass will utilize the Site-Specific Open-Cut Contingency Plans prepared for each crossing.

4.5 Wetland Crossings

The pipeline route will cross 85 wetlands (see tables 3.3.1-1 and 3.3.2-1 of EIR 3). Of the total, 12 are located on or partially within federally managed lands. Section 3.3 in EIR 3 discusses further the wetland types crossed and affected by the proposed project. Pipeline construction across wetlands will be similar to typical conventional upland cross-country construction procedures, with several modifications and limitations to reduce the potential for pipeline construction to affect wetland hydrology and soil structure.

Overland Pass will use a 75-foot-wide construction right-of-way through wetlands. Additional temporary workspace areas will be required on both sides of wetlands to stage construction, fabricate the pipeline, and store materials. On non-federally managed land, additional temporary workspace areas will be located in upland areas a minimum of 10 feet from the wetland edge. **On federally managed land, additional temporary workspace areas will be located in upland areas a minimum of 50 feet from the wetland edge.** The typical dimensions and locations of additional temporary workspace areas for each wetland crossed are listed in Appendix 9D of EIR 9.

Construction equipment working in wetlands will be limited to that essential for right-of-way clearing, excavating the trench, fabricating and installing the pipeline, backfilling the trench, and restoring the right-of-way. In areas where there is no reasonable access to the right-of-way except through wetlands, non-essential equipment will be allowed to travel through wetlands only if the ground is firm enough or has been stabilized to avoid rutting. Otherwise, non-essential equipment will be allowed to travel through wetlands only once.

Clearing of vegetation in wetlands will be limited to trees and shrubs, which will be cut flush with the surface of the ground and removed from the wetland. To avoid excessive disruption of wetland soils and the native seed and rootstock within the wetland soils, stump removal, grading, topsoil segregation, and excavation will be limited to the area immediately over the trenchline. A limited amount of stump removal and grading may be conducted in other areas if dictated by safety-related concerns. Topsoil segregation over the trenchline will only occur if the wetland soils are not saturated at the time of construction.

During clearing, sediment barriers, such as silt fence and staked straw bales, will be installed and maintained adjacent to wetlands and within additional temporary workspace areas as necessary to minimize the potential for sediment runoff. Sediment barriers will be installed across the full width of the construction right-of-way at the base of slopes adjacent to wetland boundaries. Silt fence and/or straw bales installed across the working side of the right-of-way will be removed during the day when vehicle traffic is present and will be replaced each night. Alternatively, drivable berms may be installed and maintained across the right-of-way in lieu of silt fence or straw bales. Sediment barriers will also be installed within wetlands along the edge of the right-of-way, where necessary, to minimize the potential for sediment to run off the construction right-of-way and into wetland areas outside the work area. If trench dewatering is necessary in wetlands, silt-laden trench water will be discharged into an energy dissipation/sediment filtration device, such as a geotextile filter bag or straw bale structure, to minimize the potential for erosion and sedimentation.

The method of pipeline construction used in wetlands will depend largely on the stability of the soils at the time of construction. If wetland soils are not excessively saturated at the time of construction and can support construction equipment on equipment mats, timber riprap, or straw mats, construction will occur in a manner similar to conventional upland cross-country construction techniques. In unsaturated wetlands, topsoil from the trenchline will be stripped and stored separately from subsoil. Topsoil segregation generally will not be possible in saturated soils.

Where wetland soils are saturated and/or inundated, the pipeline may be installed using the push-pull technique. The push-pull technique will involve stringing and welding the pipeline outside of the wetland and excavating and backfilling the trench using a backhoe supported by equipment mats or timber riprap. The prefabricated pipeline will be installed in the wetland by equipping it with buoys and pushing or pulling it across the water-filled trench. After the pipeline is floated into place, the floats will be removed and the pipeline will sink into place. Most pipe installed in saturated wetlands will be coated with concrete or equipped with set-on weights to provide negative buoyancy.

Because little or no grading will occur in wetlands, restoration of contours will be accomplished during backfilling. Prior to backfilling, trench breakers will be installed where necessary to prevent the subsurface drainage of water from wetlands. Where topsoil has been segregated from subsoil, the subsoil will be backfilled first, followed by the topsoil. Topsoil will be replaced to the original ground level leaving no crown over the trenchline. In some areas where wetlands overlie rocky soils, the pipe will be padded with rock-free soil or sand before backfilling with native bedrock and soil. Equipment mats, timber riprap, gravel fill, geotextile fabric, and/or straw mats will be removed from wetlands following backfilling.

Where wetlands are located at the base of slopes, permanent slope breakers will be constructed across the right-of-way in upland areas adjacent to the wetland boundary. Temporary sediment barriers will be installed where necessary until revegetation of adjacent upland areas is successful. Once revegetation is successful, sediment barriers will be removed from the right-of-way and disposed of properly.

In wetlands where no standing water is present, the construction right-of-way will be seeded utilizing the seed mixes located in Appendix E. In cultivated cropland, annual rye grass will be planted at a rate of 40 pounds per acre to provide temporary cover while allowing native herbaceous and woody vegetation to become re-established without excessive competition. Lime, mulch, and fertilizer will not be used in wetlands.

4.6 Riparian Vegetation

On federal lands, construction methods for riparian vegetation areas will be conducted utilizing construction techniques which are similar to the proposed methods for wetland crossings in section 4.5. On private lands, Overland Pass proposed to use standard upland construction methods, as discussed above, unless the EI determines that wetland crossing procedures are needed.

4.7 Blasting

Overland Pass anticipates that limited blasting may be necessary as a last resort in areas where competent shallow bedrock or boulders are encountered that cannot be removed by conventional excavation with a trackhoe trencher, ripping with a bulldozer followed by trackhoe excavation, or hammering with a trackhoe-attached device (hoe-ram) followed by excavation. Table 8.2-1 in EIR 8 identifies those areas along the proposed pipeline route where shallow bedrock is anticipated, however blasting may not be necessary at all of these locations. See Appendix L for Overland Pass' Blasting Plan.

4.8 Residential Construction

Based on aerial alignment sheets, no residences are located within 50 feet of the proposed project area, however multiple structures have been identified within 50 feet of the proposed construction work area (see table 9.1.3-5 of EIR 9). None of the structures identified are occupied residences. Overland Pass will adhere to its BMPs and permit conditions when working within 50 feet of structures.

4.9 Rangeland Construction

Overland Pass has identified grazing lease holders on federal lands. See Table 4.9-1 for lease holders by milepost. The grazing lessee/permittee will be contacted by a representative of the right-of-way holder and/or contractor prior to commencing construction on their respective allotment. Each fence crossed by construction crews will be braced and secured to prevent slacking of the wire (see Figure 2a for fence cutting methods to be utilized). The opening created will be closed when construction crews leave the project area to prevent passage of livestock. Any gaps in natural barriers used for livestock control created by construction activity will be fenced according to landowner or lease holder.

TABLE 4.9-1

Overland Pass Pipeline Project - Grazing Leases Located on BLM Lands[1]

BLM Field Office	Lease Holder	Allotment Number (if known)
Kemmerer	Carl Larson	
Kemmerer	Arnold Larson	
Kemmerer	Uinta Development	
Kemmerer	Broadbent	
Rock Springs	Aimone Martin	
Rock Springs	Bar X Sheep Company	
Rock Springs	Big Sandy & Green River Livestock	
Rock Springs	Cedar Creek Ranch	
Rock Springs	Clark & Theresa Weber	
Rock Springs	Crosson Ranches Inc.	
Rock Springs	Don & Peggy Vercimak	
Rock Springs	Don Mines ("Chilton LSE")	
Rock Springs	Donald & Wanda Moon	
Rock Springs	Douglas & Carolyne Hamel	
Rock Springs	Elza Eversole	
Rock Springs	Jon C. Wilde	
Rock Springs	Matthew G. Henry	
Rock Springs	Mud Springs Livestock Company	
Rock Springs	Quarter Circle 3 Bar Ranch	
Rock Springs	Richard P. Thoman	
Rock Springs	Robert Gamble	
Rock Springs	Rock Springs Grazing Association	
Rock Springs	Tripp Living Trust - William H. and Dora L.	
Rock Springs	W&M Thoman Ranches LLC	
Rock Springs	William Bonomo, Jolene Jensen, et al.	
Rawlins	Adams & Adams	10607
Rawlins	Audrey Brokaw	00855
Rawlins	Berthel Land & Livestock	09175
Rawlins	Blake Sheep Company	10616
Rawlins	Booth Brothers Land & Livestock	09025
Rawlins	Lonesome Fox Corporation	00879
Rawlins	Medicine Bow Ranch	00854
Rawlins	P. H. Livestock	00716
Rawlins	Peterson Livestock	00708

[1] Lease holder information trends in a general 'west to east' direction. Some lease holders hold multiple leases which are not contiguous allotments.

TABLE 4.9-1

Overland Pass Pipeline Project - Grazing Leases Located on BLM Lands[1]

BLM Field Office	Lease Holder	Allotment Number (if known)
Rawlins	Q Creek Grazing Association	00819
Rawlins	Rocky Mountain Sheep Grazing Association	00816
Rawlins	Rodewald Grazing	10615
Rawlins	Roland Bower - Percy Grazing Association - G. A. Larson	00829
Rawlins	Tall Grass LLC	00718
Rawlins	Unknown	20603
Rawlins	Wallis Livestock - Peterson Livestock LLC	00827
Rawlins	Wyoming Game & Fish Department	00605

4.10 Grazing Mitigation

To protect livestock on rangeland, Overland Pass will install trench plugs across the pipeline trench where it crosses livestock trails, and ramps will be installed to allow for the escape of livestock should they fall into the trench. Overland Pass will leave gaps between strung sections of pipe about every 0.5 mile or wherever there is a feature crossing (e.g., waterbody, road, utility), or where identified by the EI to allow livestock to pass between long, continuous sections prior to Pipe lowering in. It is anticipated that most segments will be open for 4 to 6 weeks. **Within the PNG, the open trench segments will be limited to short periods from the time the excavator opens the trench until the trench is backfilled due to the limitation of one mile of open trench at any one time.**

Following construction, temporary fences will be removed and livestock will be allowed to graze and roam freely over the permanent right-of-way.

4.10.1 Fencing

Overland Pass is responsible for contacting grazing lessees prior to crossing any fence on public lands, or any fence between public and private land, and for offering the lessees an opportunity to be present when the fence cut(s) is/are made so the lessees can be satisfied that the fence is adequately braced and secured per BLM requirements (see fence bracing typicals in appendix C). The grazing lessee will be contacted by a representative of the right-of-way holder and/or contractor prior to commencing pipeline construction and reclamation on their respective allotment. Before cutting the wires for pipeline construction, each fence crossed by the right-of-way will be braced and secured to prevent slacking of the wire. The opening created will be temporarily closed when construction crews leave the project area to prevent passage of livestock. Any gaps in natural barriers used for livestock control created by construction activity will be fenced according to BLM requirements or landowner's instructions.

All existing improvements, such as fences, gates, irrigation ditches, cattle guards and reservoirs will be maintained during construction and repaired to pre-construction conditions or better.

4.11 Waterlines

Several water pipelines will be crossed by, or are parallel to, the construction right-of-way. A minimum of 10 feet of undisturbed area will be maintained between fence lines and the parallel pipeline, if possible. If construction damage to water pipelines occurs, repairs will be made according to landowner's or lease holder's specifications. If needed, an emergency source of potable water for livestock will be provided by Overland Pass.

On the PNG, several waterlines are located within the construction right-of-way. It is anticipated that construction will occur on PNG land during the peak grazing season of May 15 through October 15. In the event that Overland Pass severs a waterline, the line will be repaired to at least equal or better quality compared to its pre-construction condition. In most cases, Overland Pass will be able to place pipe underneath the waterline. In instances where the line requires cutting or is accidentally severed, the line will be braced on both sides of the affected area near the edges of Overland Pass' pipe trench to cut off water flow. Once the pipe is laid in the trench, a new section of waterline will be placed in the gap. The waterline will be installed back to its original burial depth with at least 6-inches of clearance between the waterline and the newly installed pipeline. Alternate water sources will be provided for livestock during this period in consultation with the leaseholder or waterline owner.

4.12 Winter Construction

See appendix P for Overland Pass' Winter Construction Plan. Winter construction planning will be subject to big game winter range restrictions, as defined in Table 3.8-1, EIR 3.

4.13 Dust Control

Dust control activities will occur throughout the project area, as needed. These activities will be performed using primarily water spraying trucks in construction work areas and on access roads. Water volumes required for dust control are included in the Hydrostatic Testing Plan (Appendix G) and methods are discussed in the Traffic and Transportation Management Plan (Appendix F). Water requirements for dust control are located in EIR 3, Table 3.2.7-1.

5.0 ABOVE GROUND FACILITY CONSTRUCTION

EIR 1 (Project Description) contains detailed information on aboveground facility locations, dimensions, and land requirements. Pump stations will not be located on federally-managed lands.

5.1 Pump Stations

Construction activities at each of the two pump stations will be similar and will include a standard sequence of activities. These include clearing and grading, installing foundations, undergrounds, and control buildings and associated facilities. Figure 24 shows the layout of a typical pump station.

Temporary portable sanitary facilities will be installed during construction. Solid wastes generated during construction will be disposed of in an approved manner, as will all cleaning fluids and other waste materials. Construction activities and the storage of building materials will be confined to the pump station construction sites to the extent practical. Additional storage, if required, will be located in suitable areas off site.

Typical construction activities that will be involved in the development of pump stations are summarized below.

5.1.1 Clearing and Grading

The sites for the pump stations will be cleared of vegetation and graded as necessary to create a level surface for the movement of construction vehicles and to prepare the area for the building and pump foundations. After the completion of clearing and grading, silt fence or straw bales will be installed, as appropriate to the site, to minimize the potential for erosion. Erosion and sediment controls, if required, will be installed.

5.1.2 Foundations

Foundations will be constructed for the buildings, and soil will be stripped from the area of the building foundations. This soil may be used onsite for landscaping.

5.1.3 Underground Facilities

Underground facilities will consist of buried station piping, buried electrical conduits and cable, and a close drain system, with a below ground sump tank.

5.1.4 Building Design and Construction

Each pump station will include one prefabricated control building. The typical construction sequence will be to construct the building foundation and then set the prefabricated building on the foundation.

The pump stations will operate on locally-purchased power, and will be fully automated for unmanned operation. Overland Pass will purchase the power utilizing nearby high voltage transmission lines and install a transformer to reduce the voltage to provide 4,160V power. This 4,160V power will be for the motors that drive the pumps. Overland Pass will install a second transformer to reduce the transmission line voltage to provide 480V power for other pump station equipment.

To the extent compatible with Good Engineering Practice, the station buildings will be architecturally designed (form) and painted (color) to be compatible with landscapes in the areas in which they are located. Additionally, Overland Pass will consult with the BLM and other appropriate agencies to determine which additional aboveground facilities will require painting to enhance visual quality. The paint color will be determined after consultation with these agencies.

5.1.5 High Pressure Piping

High pressure piping in the pump station will have a design factor of 0.50 and will be buried to the extent possible. Grade and wall thickness of the pipe will be selected to ensure the pipe is capable of withstanding the operating pressures for which it is designed.

5.1.6 Pressure Testing

High pressure piping in the pump station will be hydrostatically tested with pressurized water in the piping to ensure the piping is capable of withstanding the operating pressure for which it is designed. Internal test pressures and durations will be in accordance with Title 149 Part 195.

5.1.7 Commissioning

Commissioning involves activities to verify that all pump station equipment is properly installed and working, the controls and communications systems are functional, and the pump station is ready for service.

5.1.8 Final Grading and Landscaping

After the completion of start up and testing, or as soon as weather permits thereafter, the pump station sites will be final graded and landscaped. Because the construction of the stations is scheduled for completion in the fall of 2007, landscaping (if any) may be postponed until the spring or early summer of 2008.

A permanent security fence will be installed around the pump station site. The station access roads also will be final graded. Parking areas for vehicles will similarly be paved or graveled. Motion lights may be installed and exterior lights may be dimmed, particularly in areas of sensitive wildlife habitat.

Because each of the pump station sites is located in remote, undeveloped areas and/or adjacent to existing commercial/industrial facilities, the station buildings will be designed to be consistent with the character of the surrounding land uses (to the extent possible) and an extensive landscaping program is not planned. Vegetation may be planted in front of the gate to each fenced site area and at the entrance to the access road. In addition, trees that are common in the surrounding region may be planted reflecting the pattern of vegetation in surrounding areas.

5.1.9 Infrastructure Facilities

Each pump station will require electricity and telephone facilities, which will be obtained from a local source.

5.1.10 Erosion Control, Revegetation, and Maintenance Procedures

During the construction of the pump stations, Overland Pass will adhere to applicable state and local permits, as well as site-specific mitigation developed in consultation with land managing agencies and landowners.

5.2 Meter Stations

Many of the procedures used in meter station construction will be similar to those used in pump station construction described above as the meter stations will be constructed within proposed pump station sites or existing commercial/industrial facilities. Meter station construction will typically include clearing and grading, preparing foundations, installing underground piping, erecting and installing buildings, installing above ground piping and equipment, testing the piping, testing the control equipment, cleaning up the work area, paving or graveling access roads and parking areas, fencing the facilities, and final grading and landscaping. Figure 25 shows the layout of a typical meter station.

5.3 Mainline Valves and Launcher/Receivers

As part of construction of the pipeline, valves will be installed at spacings defined by the DOT's Title 49 CFR Part 195.260 and listed in table 1.3.2-1. Figures 26a through 26e show the layouts of the various valve sites. Section 11.2.7 of EIR 11 discusses further the placement requirements for valves. Launcher/receiver (scraper trap) sites will be constructed as depicted on figure 27a through 27c.

Valve and launcher and/or receiver construction will include clearing and grading, installing underground piping, testing the piping, testing the control equipment, cleaning up the work area, graveling the site, and fencing the facilities. Valve and launcher and/or receiver construction will generally be concurrent with the construction of the pipeline. Upon completion, the disturbed area will be stabilized with gravel within a fenced enclosure or by seeding with appropriate species outside the fence and the aboveground

components of these facilities will be painted to blend the facilities in with surrounding vegetation and soils. The valves and launcher and/or receiver sites will be enclosed in a chain-link or barbed wire security fence.

6.0 RECLAMATION MONITORING PLAN

6.1 Goals of Reclamation Monitoring Plan

To assess the effectiveness of the reclamation treatments and to evaluate the condition of right-of-way, Overland Pass will implement a monitoring program consisting of field inspections and vegetative analysis. A report of the condition of the right-of-way and the status of sensitive resources affected during construction will be submitted to the BLM. The monitoring program will also identify remedial measures that will be considered by Overland Pass to mitigate environmental degradation if the initial treatments were not effective in achieving the objectives of the reclamation program.

6.2 Reclamation Monitoring Criteria

Overland Pass' effort to reclaim areas disturbed during construction will be evaluated for a minimum period of five years. Successful reclamation performance will be based on revegetation success (*e.g.*, cover, frequency, and diversity), the absence of weeds or invasive plants, stability of the construction right-of-way, waterbody bed and bank stability; and visual aesthetics. Monitoring will continue after the five year period in areas where revegetation, weed, and stability problems continue. **On the PNG, monitoring will occur on an annual basis for the first five years, and where problem areas exist thereafter, and will be subject to the same reporting standards as listed below.**

6.3 Monitoring Techniques and Procedures

To evaluate the success of revegetation, Overland Pass will use a quantitative rapid diversity assessment. This is an effective and efficient technique to monitor the composition of vegetative cover and diversity over time and between sampling plots. The technique is useful to measure the response of vegetation to disturbance.

In association with a vegetative monitoring program, Overland Pass will assess the success of reclamation efforts to stabilize soil and waterbodies.

6.3.1 Vegetation Monitoring

Overland Pass will monitor quadrats (*i.e.*, rectangular analytical plots identified in the field and retrievable by GIS equipment) located in the right-of-way, and control quadrats located outside the right-of-way. Monitoring will occur in July during the first, third, and fifth years following reclamation. Plant diversity, frequency, and percent cover data will be collected. Data obtained from the reclaimed right-of-way will be compared to vegetative data obtained from the undisturbed, naturally-occurring vegetative populations adjacent to the right-of-way. Variation between plots will provide a quantitative indication of the relative success of reclamation. Section 6.4.1 describes the number and location of the plots that will be assessed.

In areas where plantings/transplanting occurred, reclamation success will be based on survivorship and vigor of the transplants.

6.3.2 Erosion and Runoff Control

Periodic ground and aerial inspections of the route by Overland Pass Pipeline Operations and Maintenance (O&M) personnel should detect areas of erosion (*i.e.*, formation of gullies, deposition of sediment) and uncontrolled runoff (*i.e.*, berm washouts) before significant impacts occur. In addition to O&M reconnaissance, reclamation specialists will conduct annual inspections during July of first, third, and fifth years following reclamation to assess the condition of the right-of-way and the effectiveness erosion control measures. This ground inspection will concentrate on steep slopes, erodible soils, and sensitive areas identified during construction by the EIs and agency representatives.

6.3.3 Waterbody Stabilization

In association with erosion control and runoff inspections, Overland Pass representatives will visually assess the condition of bed and bank stabilization measures installed during restoration at waterbodies that were constructed using site-specific crossing plans. This assessment will occur with the same frequency of the erosion and runoff control inspections. In addition, a limited number of dry washes that drain into high quality streams will also be assessed for bed and bank stability.

6.4 Monitoring Methods and Procedures

6.4.1 Vegetation Quadrats

Overland Pass will survey plots to determine the vegetative diversity, density, frequency, and percent cover on the right-of-way and in off right-of-way areas following restoration. The monitoring program will meet the project's post construction monitoring requirements listed in Section VIII.A.3 of the Soil Stabilization Plan, which reads "Revegetation shall be considered successful if upon visual survey the density and cover of non-nuisance vegetation (or crops in cultivated crop land) are similar in density and cover to adjacent undisturbed lands". Overland Pass will consider long term revegetation to be successful if approximately 80% of the proposed vegetative communities are reestablished in disturbed areas. In addition, vegetative monitoring will determine if, or to what extent, noxious weeds have become established in the project areas.

Overland Pass will use two teams for surveys following construction. The teams will consist of a vegetative specialist and a weed expert. Overland Pass will obtain landowner permission prior to conducting surveys.

Overland Pass will assess the vegetative diversity, frequency, and percent cover in sampling quadrats to assess revegetation. Overland Pass will monitor X quadrats, of which, X quadrats will be located in the right-of-way, and X in adjacent, undisturbed areas off the right-of-way. The number of quadrats per vegetative community will reflect the percentage of each community crossed by the pipeline route. **Note:** Overland Pass will consult with the BLM prior initiating the program, to determine appropriate location and number of quadrats to be assessed.

The sampling quadrats will be paired: one quadrat will be located on the construction right-of-way and a second quadrat will be located off the right-of-way in an undisturbed area (*i.e.*, control plot). The control quadrat will be located in proximity to right-of-way quadrat. Quadrant size will vary by vegetative community:

- In Sagebrush Shrub areas: X quadrats (X in the right-of-way and X in undisturbed areas) measuring 3 meters square will be assessed; and,

- In the Grassland areas, X quadrats (X in the right-of-way and X in undisturbed areas) measuring 3 meters square will be assessed.

Within the quadrats, the monitors will determine the diversity of the cover by recording the number of native and invasive species present.

Diversity will be indicated by the number and species of plants counted in each quadrat. Foliar cover will be estimated. "Cover" is defined as the area of ground covered by vertical projection of the aerial portions of plants. Foliar cover will be recorded in 10 percent increments, (*i.e.*, 10, 20, 30 percent, etc.). For example, foliar cover of 10 percent will mean that 90 percent of the quadrat consists of exposed litter, rock, and other surface debris, and 10 percent is covered with living, foliar vegetation.

Comparing the data from sample year to sample year will provide Overland Pass with an indication if: cover is increasing, if the species composition and diversity of the vegetation is expanding or contracting from one area to another, and if noxious weeds have been established in the right-of-way.

The geographic location of quadrats will be collected and stored using hand-held, sub-meter accuracy global positioning system (GPS) equipment. Location and size of the quadrants will be recorded using area polygons. These data can easily be transferred from the GPS equipment to either a CAD or GIS software application for use on project maps or alignment sheets. Overland Pass will also permanently identify the four corners of the quadrats with 1x2-inch wooded or metal stakes embedded into the ground so that a 4-inch section of the stake is visible for future reference.

Overland Pass will also monitor the survival, vigor, and success of transplants in riparian areas. Vegetation quadrat spacing will be the same as in other areas. This assessment will include a count of living transplants and invasive species. These data will be compared to the number of trees transplanted during restoration.

Overland Pass will monitor the presence of noxious weeds in the right-of-way during the same timeframe as outlined above. Measured values for native vegetation will be compared to the minimum success standards for each year in a summary report that will be submitted to the BLM.

If required, Overland Pass will implement an additional revegetation and/or noxious weed control program in areas where monitoring has determined that additional measures would likely be successful.

6.4.2 Erosion and Runoff Control

Overland Pass will selectively survey areas that are susceptible to erosion (*i.e.*, steep slopes and erodible soils) during the same timeframe as outlined above. The surveys will be conducted in July and will involve a visual inspection of steep slopes, erodible soils, and other erosion sensitive areas identified by EIs, and agency personnel during construction. This survey will assess the condition of the right-of-way, ATWS, and access roads, the effectiveness of the erosion control devices, and recommend repair or maintenance procedures that are necessary to meet reclamation objectives. Overland Pass will survey approximately X sites. Overland Pass will obtain landowner permission prior to conducting surveys. The inspection sites will range from 200 to 1,000 feet in length.

Overland Pass will use teams consisting of a soil scientist and a vegetation specialist for the survey. The teams will complete an Erosion and Runoff Control Inspection Form for each site visit. Photographic documentation will accompany the inspection report.

Survey teams will notify Overland Pass O&M personnel if areas of the right-of-way require immediate stabilization and repair to meet the reclamation objectives. O&M personnel will attempt to respond to a repair request within 48 hours of notification.

6.4.3 Waterbody Stabilization

Overland Pass will survey high-quality waterbodies, and dry washes that drain into high-quality streams during the same timeframe as outlined above. This visual assessment will evaluate the stability of the waterbody, condition of permanent erosion and sediment control measures, and the condition of the streambed and banks. Surveys will be conducted in July, and will involve two teams, each consisting of reclamation specialists. Overland Pass will obtain landowner permission prior to conducting surveys. The teams will use a Waterbody Stabilization Inspection Report Form. Photographic documentation will accompany the inspection report.

Overland Pass anticipates that inspection effort will require two weeks of field work to complete. During the surveys teams will notify O&M personnel if any stream or dry wash require stabilization and repair to meet the reclamation objectives. O&M personnel will attempt to respond to a repair request within 48 hours of notification.

6.5 Reclamation Monitoring Reports

Overland Pass will prepare an annual Reclamation Monitoring Report and submit this report to the BLM on or before December 31 of the inspection year. These reports will include:

Vegetation

- A summary of the general vegetative diversity, frequency, and cover between the right-of-way and the comparison with off right-of-way vegetation quadrats;
- An assessment of the condition of transplants in riparian areas;
- Identification of areas that require remedial action;
- Recommendations and schedule for remedial action(s); and,
- Monitoring forms.

Erosion and Water Control

- Summary description of the condition of the right-of-way;
- Identification and description of problem areas;
- Recommendations and schedule for remedial action (s); and
- Erosion and Runoff Control Inspection Forms.

Waterbody Stabilization

- Summary description of the condition and stability of high-quality waterbodies and associated washes;
- Identification and description of problem areas;
- Recommendations and schedule for remedial action (s); and
- Waterbody Stabilization Inspection Report Forms.

6.6 Remedial Action

Overland Pass will consult with the BLM Project Manager prior to initiating remedial actions. This consultation will establish a work schedule, prioritize the list of actions to be taken, identify the equipment required, and describe mitigative measures that will be implemented.

7.0 OPERATION AND MAINTENANCE OF THE FACILITIES

Overland Pass will operate and maintain the pipeline in accordance with Federal and state regulations. The pipeline system will be monitored and controlled 24 hours a day by a remote dispatch center.

Aboveground facilities will be inspected annually to satisfy DOT requirements. Pipeline inspections will encompass testing equipment, recalibration, and repair, replacement, and reporting, as necessary.

The pipeline system will be routinely inspected on the ground or in the air to detect and identify indications of leaks, evidence of pipeline damage, or environmental concerns (*e.g.*, erosion hazards, gullies, sedimentation of waterbodies, all terrain vehicle rutting, etc.). Inspections will be conducted in accordance with minimum Federal safety standards, Transportation of Hazardous Liquids by Pipeline, Title 49 CFR Part 195. Environmental concerns will be addressed as necessary to comply with conditions in this plan.

The pipeline will be protected from external corrosion (pitting) by the protective coating applied to the pipe and by installation of a cathodic protection system. The external pipe coating is the primary corrosion protection method. Cathodic protection applies an electrical current to the pipeline from an external direct current power source (rectifier) to prevent corrosion where the coating is not 100 percent effective. Rectifiers will be located near existing power distribution lines and mounted on poles in or adjacent to the right-of-way and connected to carbon anode ground bed within the permanent 50-foot right-of-way. The condition of the pipe coating and effectiveness of the cathodic protection system will be monitored in accordance with Federal standards and regulations. Repairs to the pipe, pipe coating, or the cathodic protection system will be made as appropriate.

Locations of the cathodic protection rectifiers and ground beds associated with the pipeline cannot be identified until the pipeline is installed and tests are conducted. Test leads will be attached to the line at mile posts, roads, pipeline crossings and highways to monitor the cathodic protection system. Each set of test leads will be connected in a junction box installed on the ground surface along the right-of-way. The junction boxes will not interfere with existing land uses.

Pipeline markers will be installed to mark the underground location of the pipeline and to identify the owner of the system and to display telephone numbers for emergencies or other inquiries. The pipeline markers will be located where the pipeline crosses fence lines, roadways, waterbodies, and other public access locations.

During operation of the pipeline, Overland Pass will periodically remove woody vegetation from scrub-shrub wetlands to facilitate post-construction pedestrian and aerial inspections of the pipeline and right-of-way. In accordance with Overland Pass' environmental plans, Overland Pass will maintain in a 10-foot-wide herbaceous strip centered over the pipeline and will remove trees greater than 15 feet in height within a 30-foot-wide strip centered over the pipeline as is permitted by the BLM.

8.0 ABANDONMENT

Overland Pass has no plan to abandon the pipeline facilities. If and when Overland Pass chooses to abandon part of all of the proposed facilities, Overland Pass will develop an abandonment plan. An

Abandonment Plan would be submitted to the Authorized Officer for approval at least 60 days prior to abandonment of facilities on Federal land and a pre-abandonment conference scheduled.

If abandonment were to occur, the pipeline would be purged of liquid residues, cleaned, isolated from interconnections with other pipelines, and sealed without removing the pipe from the ground. Minimum industry standards require that pipe maintain its integrity for at least 50 years. With regular maintenance during operation, pipe will typically last much longer. Therefore, Overland Pass does not anticipate long term soil subsidence due to a lack of pipe integrity or excessive corrosion.

Abandonment in place minimizes surface disturbance and other potential environmental affects from pipe removal. Aboveground pipeline facilities, including equipment and foundations, at pump and meter stations would be removed, and the station properties reclaimed to maintain consistency with federal land use plans.

Upon abandonment of the pipeline in part or in whole, the right-of-way associated with the abandon facilities will typically be returned to the landowners or land managing agencies according to the easement agreements.